Universe Scientific Publishing
ORIGINAL ARTICLE

Clinical Effect Observation of Spiral CT in The Etiological Diagnosis of Senile Acute Abdomen

Jun Li*

Mining Group General Hospital, Zixing, Hunan, 423404, China

ABSTRACT Objective: To discuss the clinical application value of multi-slice spiral CT in etiological diagnosis of senile acute abdomen. **Methods:** To select 80 cases of elderly patients with acute abdomen received treatment from June 2008 to August 2014 in our hospital. Among them, 40 patients were diagnosed by multi-slice spiral CT technique and considered as CT group; 40 patients were diagnosed by liver MRI technology and considered as MRI group. The diagnostic accuracy and adverse reaction rate of two groups were compared, and the comparison results were analyzed statistically using SPSS statistical software. **Result:** The diagnosis rate of CT group was significantly higher than that of MIR group, while the adverse reaction rate was significantly lower than that of MIR group, $p < 0.05$, with statistical significance. **Conclusion:** multi-slice spiral CT can accurately diagnose the cause of senile acute abdomen. It has important clinical significance for the treatment of senile acute abdomen, and it has clinical application value.

KEYWORDS
Acute abdomen
MRI
Multi-slice spiral CT
Diagnosis

1. Introduction

Acute abdomen is a kind of clinical disease that patients have a sudden abdominal pain within a few hours or less [1]. In recent years, with the aging of the population in our country and the change of life style, the incidence rate of elderly patients with acute abdomen shows increasing trend. The problem of population aging has gradually increased, but it has not been able to meet the progress of medical and health services to achieve synchronous development, so that the need of medical care of the elderly has become an outstanding problem to be solved urgently in the major hospitals. Lack of current construction of national medical service level of the elderly is a dangerous precursor of "not rich first disease" and "prematurely senile". Acute abdomen is an important representative of various diseases in elderly. The acute abdomen usually brings a severe pain, even threaten the lives of patients [2]. At present, the clinical diagnosis of acute abdomen mainly adopts CT, SPECT, MRI, ultrasound, etc [3]. Therefore, effectively carrying out early diagnosis of the elderly acute abdomen has important clinical significance for subsequent treatment of patients. Therefore, the author adopts multi-slice spiral CT and MRI to conduct the related clinical study of elderly acute abdomen diagnosis. The results are as follows.

doi: 10.18686/aem.v4i3.6
Received: August 6, 2015; Accepted: August 28, 2015; Published online: September 17, 2015

*Corresponding author: Mining Group General Hospital, Zixing, Hunan 423404, China. E-mail: fd1y168@126.com

2. Clinical data and methods

2.1. Clinical data

Select 80 cases of elderly patients with acute abdomen received treatment from June 2008 to August 2014 in our hospital. The age of elderly patients was 38–67 years old, average age of 69.4 ± 5.7 years old. Among them, 40 patients were diagnosed by multi-slice spiral CT technique and considered as CT group; 40 patients were diagnosed

by liver MRI technique and considered as MRI group. The clinical data of two groups is shown in Table 1.

Table 1. Summary of clinical data of two groups.

Group	N (cases)	Age (year)	Male (cases)	Female (cases)	Course of disease (month)
CT group	40	69.6 ± 3.9	34	6	3.2 ± 1.7
MRI group	40	68.7 ± 4.2	32	8	3.5 ± 1.4
Statistic	/	-0.599	0.346	0.346	-0.234
p value	/	0.557	0.556	0.556	0.818

Note: $p > 0.05$, there were no significant differences in gender, age and course of disease between two groups, and with comparability.

2.2. Method

2.2.1. Clinical diagnosis method

Multi-slice spiral CT scanning

Using SOMATOM 32 layer spiral CT instrument, the scanning parameters are as follows. 260 mA, 120 kV, reconstruction slice thickness of 3–5 mm, pitch of 1.0–1.2, scan time of 0.5 s, and a total liver scan is performed in patients within 6–10 s. All the patients take orally 400–1000 mL of 2% Meglumine Diatrizoate before examination, and conventional fasting for 6 h. During check, the patient takes a supine position. The scanning range is from patients' diaphragmatic dome to the area of the inferior margin of the pubic bone, extend down until the end of the pathological changes scan if necessary. A thin layer scanning method is used to scan the local lesion site. The scan parameters are set to a layer thickness of 5 mm, layer distance of 5 mm, pitch of 1.5 [3].

Liver MRI technology

A SIGNACONTOUR 0.5T nuclear magnetic resonance imaging system (General Electric Company) was used to examine, adopting assorted caudomedial part phased array coil and abdominal phased array coil. Specific scan parameters are set as follows: Gradient field intensity is 45 mt/m. Conventional MRI plain scan, such as T1WI, T2WI and others and DWI sequence scan are adopted, then adopt further dynamic enhanced scan. The inspect range is from patients' diaphragmatic dome to the area of the inferior margin of the pubic bone. Layer thick: 10 mm, layer distance: 2.0 mm, field: 40 cm × 30 cm.

2.2.2. Positive judgment standard

Diagnosis of senile acute abdomen is made by experienced radiologists of our department according to the pathological data of patients. And each patient's dispersion data and dynamic enhanced data were analyzed independently, to avoid the bias.

2.2.3. Statistical method

Get statistical clinical diagnosis results of two groups, and use the SPSS 13.0 software to conduct chi square test, measurement data is expressed as mean ± standard deviation ($\bar{x} \pm s$) and analyzed by *t* test, measurement data is expressed as rate (%). $p < 0.05$ is regarded as a basic test standards of statistical significance.

2.3. Efficacy determination

2.3.1. Determination of diagnosis rate

Take diagnosis and misdiagnosis as the main cases of selection. (1) Diagnosis: vital signs of patient are back to normal and normal abdominal movement; (2) Misdiagnosis: Symptoms of patients are without reduction or aggravated, and no reduction in the frequency of abdominal pain, even a small number of patients have signs of lung fester. Diagnose rate = (1) / ((1) + (2)) × 100%.

2.3.2. Determination of adverse reaction rate

Considering mild, moderate and severe abdominal pain regard as a reference of adverse reaction rate, survey adverse reactions of two groups after treatment generally. Adverse reaction rate = moderate abdominal pain + severe abdominal pain / Total of cases × 100%.

3. Results

3.1. Comparison of diagnosis result

The diagnosis results of 32 patients with MRI were consistent with the results of surgery and pathology, and 8 cases had missed diagnosis and misdiagnosis. In the CT group, the diagnosis results of 39 patients were consistent with the results of surgery and pathology, and one case had missed diagnosis and misdiagnosis. The comparison of clinical diagnosis of two groups was shown in Table 2.

Table 2. Comparison of clinical diagnosis results of two groups.

Group	N (cases)	Diagnosis (cases)	Misdiagnosis (cases)	Diagnose rate (%)
CT group	40	32	8	80.0
MRI group	40	39	1	97.5
Statistic	/	6.1346	6.1346	16.5475
P value	/	0.0133	0.0133	0.0004

Note: The difference between two groups was statistically significant ($p < 0.05$).

3.2. Comparison of adverse reaction rate

The adverse reaction rate was 45% in the MRI group and 7.5% in the CT group. The comparison of adverse reaction rate of two groups was shown in Table 3.

4. Discussions

Acute abdomen refers to the clinical syndrome accompanied by systemic reaction, it is caused by occurrence of acute pathological changes of the abdominal cavity, pelvic and retroperitoneal organs and tissues, featured by abdomen symptoms and signs. The common acute abdomen includes acute appendicitis, acute perforation of peptic ulcer, acute

Table 3. Comparison of adverse reaction rate of two groups.

Group	N (cases)	Mild abdominal pain	Moderate abdominal pain	Severe abdominal pain	Adverse reaction rate (%)
CT group	40	22	10	8	45
MRI group	40	37	2	1	7.5
Statistic	/	14.5278	9.4976	6.1345	42.6667
P value	/	0.0001	0.0329	0.0133	0.0000

Note: The difference between two groups was statistically significant ($p < 0.05$).

ileus, acute infection of biliary tract, cholelithiasis, acute pancreatitis, abdominal trauma, urinary calculi, ectopic pregnancy and so on. The first occurrence place of acute abdomen may be the primary site of lesion. The process of its attack is the umbilicus or epigastrium at the beginning, which is inflammatory irritant visceral pain, when the inflammation spread to membrane serosa or the surrounding wall peritoneum of appendix, manifested as the right lower abdomen pain. The most obvious part of abdominal pain is usually the most serious lesions.

Elderly patients with acute abdomen usually have its unique clinical features, and a proper examination method is needed to diagnose the cause of disease, so as to choose the appropriate treatment method. Multi-slice spiral CT Technology (MSCT) has the following advantages in clinical diagnosis of acute abdomen. (1) MSCT can accurately determine the location and size of the lesion and the spatial relationship of adjacent structures [4], greatly improves the drawbacks which is lack of clear display of traditional enhancement CT around the lesion site [5]; (2) It can acquaint the blood supply level of tumor lesion tissue and the integrity of tumor capsule of patients with acute abdomen, thereby greatly improving the clinical diagnosis rate of tumor lesion, and it can be used to evaluate the tumor growth state and growth mode, so as to develop appropriate therapeutic regimen [6]; (3) MSCT scanning speed and post image processing ability has improved significantly, compared with the traditional CT technology. It can significantly reduce the artifact interference caused by gastrointestinal motility and breathing of patients, improving the accuracy of diagnosis; (4) CT inspection technique is simple and easy to operate [3], and the patient's body position is relatively comfortable, so the patients are easy to accept; (5) CT inspection technology has a strong ability to separate, and it can display the internal structure of lesion site, such as the lesion cavity and thickness of cavity wall. Through the clinical research, the author finds that the accuracy of diagnosis of the MRI group is 80%, the accuracy of diagnosis of the CT group is 97.5%, and the adverse reaction rate is 7.5%. The accuracy of the CT group is significantly higher than that in the MRI group ($p < 0.05$). Therefore, the accuracy and feasibility of multi-slice spiral CT in early diagnosis of liver cancer are future confirmed.

In a word, multi-slice spiral CT can accurately diagnose the cause of senile acute abdomen, and it has an important clinical significance for the diagnosis and treatment of senile acute abdomen, so it has clinical application value.

Reference:

1. Ren Z. CT diagnosis and differential diagnosis of primary hepatocellular carcinoma. *Applied Journal of General Practice*. 2010;2(2):135.
2. Shang QL, Xiao EH, He Z. Discussion on the technique of magnetic resonance diffusion weighted imaging of liver. Chinese *Journal of Medical Imaging Technology*. 2010;20(2):1515.
3. Gaeta M, Barone M, Russi EG, et a1. Carcinomatous solitary pulmonary nodules: Evaluation of the tumor—bronchi relationship with thin section CT. *Radiology*. 1993;187(2):535–539.
4. Wang HY, Yang Y, Cheng LZ. Application value of spiral CT in the diagnosis of senile acute abdomen. *China Foreign Medical Treatment*. 2010;07:22–24.
5. Arita T, Matsunoga N, Takano K, et al. Abdominal aortic aneurysm: rupture associated with the high-attenuating crescent sign. *Radiology*. 1997;204(3):765–768.
6. Gore RM, Miller FH, Pereles FS, et al. Helical CT in eva1cation of the acute abdomen. *AJR*. 2000;174(4):901–913.